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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/767,539	01/23/2001	Steven Adler-Golden	SPSC/001/US	2985
7590	10/06/2006		EXAMINER	
Brian M. Dingman Mirick, O'Connell, DeMallie & Lougee, LLP 100 Front Street Worcester, MA 01608-1477				GUTIERREZ, ANTHONY
		ART UNIT	PAPER NUMBER	2857

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/767,539	ADLER-GOLDEN
	Examiner	Art Unit
	Anthony Gutierrez	2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 20 June 2006.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-7, 36 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-7 and 36 is/are rejected.

7) Claim(s) 36 is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Objections***

1. Claim 36 recites the limitation "the number of sets" in the first line of the claim.

There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1-5, 7, and 36 are rejected under 35 U.S.C. 102(a) as being anticipated by the paper "Atmospheric Correction for Short-wave Spectral Imagery Based on Modtran4" to Adler-Golden et al. (1999).

As to claim 1, Adler-Golden et al. discloses an improved method of correcting for atmospheric effects on a remote image of the Earth's surface taken from above, wherein the image comprises a number of images of the same scene each including a large number of pixels, each at a different wavelength band, and including infrared through visible wavelengths (Title, Abstract, Introduction, and Aerosol Retrieval), comprising: providing a radiation transport model that relates spectral radiance to spectral reflectance via a set of parameters (Methodology, fourth paragraph); providing a discrete number of trial aerosol visibility values for at least one of one or both of trial aerosol property values and aerosol types; using the radiation transport

model to calculate the model parameter values for each of the trial aerosol visibility values (Aerosol Retrieval, first and second paragraphs where the LUT (look-up table) is used as the radiation transport model); selecting image pixels having a one or more presumed, predefined ratios of reflectance's among two or more specific wavelength bands (the calibration panels); using the radiation transport model parameters to determine the surface reflectance for the selected image pixels for each of the specific wavelength bands for each combination of trial visibility value and trial aerosol property value or values, or aerosol type (Aerosol Retrieval, third and last paragraph); comparing the determined surface reflectance's to the predefined ratio of reflectances; and resolving from the comparison a corrected image visibility value for each trial aerosol property value or values or aerosol type (Figure 2, which shows a comparison of data points that are either uncorrected or adjacency-corrected at two different wavelength values).

As to claims 2 and 3, Adler-Golden et al. further discloses using the radiation transport model to calculate the model parameter values includes performing calculations for a plurality of geometric conditions of solar illumination and sensor viewing, storing the calculation results, and interpolating the stored results to the specific geometric conditions that apply to the image being analyzed (Methodology, second paragraph and Aerosol Retrieval, second paragraph, last line).

As to claim 4, Adler-Golden et al. further discloses using the radiation transport model to calculate the model parameter values includes performing calculations of the radiance from the surface that is scattered into the sensor by weighting the spectra

from different parts of the surface according to their contributions to each pixel (Methodology, third and fourth paragraphs).

As to claim 5, Adler-Golden et al. further disclose that the radiation transport model includes MODTRAN (Title, Abstract).

As to claim 7, Adler-Golden et al. further implies that the viewing angles can be off-nadir (Methodology, second paragraph) by disclosing that viewing and solar angles are used in the method. Off-nadir angles are implied because if there were only one viewing or solar angle, it might be limited to nadir, but if there is more than one (plural) then one must be off-nadir.

As to claim 36, Adler-Golden et al. further discloses the concept of accounting for spectral dependencies and the different scale height and phase function that apply to Rayleigh scattering (Methodology, fourth paragraph), as well as multiple scattering algorithms (Validation of Reflectance Spectrum Retrievals, third paragraph) and the plan to upgrade MODTRAN4 to include other atmospherically important collision-induced spectral features (Validation of Reflectance Spectrum Retrievals, final paragraph).

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the paper "Atmospheric Correction for Short-wave Spectral Imagery Based on Modtran4" to Adler-Golden et al. (1999), in view of Barnes (US Patent 6,422,508 B1).

Adler-Golden et al. discloses the use of spectral imaging sensors for remotely sensed spectral imagery of the earth's surface (Introduction, first paragraph) and further implies the use of angles that are off-nadir (Methodology, second paragraph) by disclosing that viewing and solar angles are used in the method. Off-nadir angles are implied because if there were only one viewing or solar angle, it might be limited to nadir, but if there is more than one (plural) then one must be off-nadir.

Adler-Golden et al. does not specifically disclose that the sensor viewing angle is nadir.

Barnes, however, discloses a method for hyperspectral imaging that incorporates specifically both overhead (or nadir) and off-nadir sensor angles (col. 1, lines 15-48, and col. 3, lines 39-44). Barnes teaches that conventional methods are limited to nadir or "straight down" viewing (col. 4, line 61-col. 5, line 4), but the method of invention benefits by extending the angle to include off-nadir angles to increase the cross-sectional area of the sample set (col. 2, lines 46-50).

It therefore would have been obvious to one of ordinary skill in the art at the time of invention to apply the method of Adler-Golden et al. not only to off-nadir scanning, but also specifically to nadir scanning, since it would increase the cross-sectional area under survey in a combined overhead/off-nadir scan as opposed to off-nadir scanning alone, and since it would allow for other benefits (independent of

increased scan angle benefits) that are obtained by other aspects of the method of Adler-Golden et al., when applied in a conventional fixed nadir scanning system, the conventional scanning system being readily available and familiar to one skilled in the art, thereby increasing the applicability of the method of.

#### ***Response to Arguments***

6. Applicant's arguments filed 6/20/06 have been fully considered but they are not persuasive.

Regarding the rejections under 35 USC 112, the Applicant has cited support in the original disclosure.

Regarding the rejections with respect to the prior art, the Applicant has argued that the last paragraph of the reference to Adler-Golden clearly does not disclose the steps set forth in lines 11-16 of claim 1. Before presenting this assertion, the Applicant provided the text of the paragraph, indicated that the second and third lines of the paragraph referred to a paper by Kaufman, and that the last two sentences referred to a single step implementation.

The Examiner relied on this paragraph in combination with the previous paragraph to address the limitations of lines 13-15 of claim 1. The Examiner has relied on other sections of the reference to address lines 11, 12, and 16 of the claim.

The Examiner does not see the relevance of the single step implementation addressed in this paragraph. It seems to be a side note mentioned in passing and the Examiner has not relied on it.

The Examiner however has relied on the information provided in the reference referring to Kaufman's findings. The Examiner maintains that while Adler-Golden refers to the paper of Kaufman, he does so specifically to implement the findings of Kaufman in his own method in a certain circumstance. It is apparent to the Examiner that Adler-Golden, refers to Kaufman to provide alternative support for the special case in which there are no "known" surfaces in the image. The Examiner does not consider the disclosure of this "alternative" method to negate the method taught in the previous paragraph on which the Examiner has also relied, but rather to supplement it in the special case. The Applicant has not commented on this previous paragraph.

Furthermore, the support in Applicant's original disclosure cited by the Applicant to overcome the rejections under 35 USC 112 with respect to claim 36 is substantially similar to implementation of the teachings of Kaufman. The Examiner has withdrawn his rejections under 35 USC 112 and maintains that Adler-Golden's incorporation of the teachings of Kaufman accomplish the methodology as whole, every bit as much as the additional limitations provided in claim 36, properly further limit the method of claim 1 on which it is dependent.

### **Conclusion**

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed

until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Gutierrez whose telephone number is (571) 272-2215. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on (571) 272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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9/29/06

  
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